RFP NO. CP-21-03
Duvall Field Park Design

ADDENDUM 2

This Addendum transmits a Geotechnical Report prepared by Kim Engineering, Inc. for Charles P. Johnson and Associates in 2010 (see attached). Please acknowledge receipt of this Addendum, as required, on the Proposal Form.

KIM

KIM ENGINEERING, INC.

Consulting Geotechnical Engineers

11127 New Hampshire Ave.
Silver Spring, MD 20904
301-754-2882

January 18, 2010

Mr. Brian Davila
Charles P. Johnson & Associates
1751 Elton Road
Silver Spring, Maryland 20903

Project: Concession Building at Duvall Field
College Park, Maryland (Our Project No. 10506)

Dear Mr. Davila:

We are pleased to submit three copies of our report for the above referenced project. This report has been prepared in accordance with our agreement dated December 15, 2009.

Services performed include the drilling of one test boring, laboratory testing, and preparation of a geotechnical engineering report.

Our geotechnical engineering report includes the following:

1. Evaluation of estimated subsurface conditions at the proposed concession building area.

2. Recommendations concerning foundation support of the proposed building and floorslab on grade.

3. Recommendation regarding handling of groundwater in design.

4. Recommended earthwork requirements for construction of loadbearing fills including an assessment of soils to be excavated for use as fill.

5. Comments regarding geotechnical construction considerations that should be addressed both in design and in the construction plans and specifications.

Services with respect to surveying for line and grade, specific construction dewatering recommendations, environmental matters, temporary slopes, paving design, erosion control, cost or quantity estimates, plans, specifications, and construction observation and testing were not included in the scope of services.

Soil samples will be held until March 5, 2010 and then disposed of, unless other disposition is requested.

We appreciate the opportunity to be of service to you for this project. If you have any questions regarding this report, please contact us.

Very truly yours,

KIM ENGINEERING, INC.

Fasika A. Metafria
Project Engineer

M. Sunny Kim, P.E.
Principal Engineer

GEOTECHNICAL ENGINEERING REPORT
DUVALL FIELD
COLLEGE PARK, MARYLAND

TABLE OF CONTENTS

1. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The following is a summary of our conclusions and recommendations:

a. Subsurface conditions in the proposed building area generally indicate silty sand of Stratum A.

b. The firm sandy soils of Stratum A is suitable for support of spread footings. We recommend a design soil bearing pressure of 2,000 psf for footings founded on firm, natural soils of Stratum A or on new compacted fill. Footing should be lowered to the firm natural soils if any existing fill or unsuitable soils are encountered.

c. The natural soils of Stratum A, or new compacted fill should be suitable for support of floor slab on grade. A minimum 6 inch layer of washed gravel or crushed stone should be placed below the slabs to act as a moisture barrier.

d. Compacted fill for the building support should be classified silty sand (SM) or better per ASTM D2487, and compacted to at least 95 percent of maximum dry density per ASTM D1557. The on-site soils are generally considered suitable for reuse as fill.

e. The site is classified as "D" according to 2006 International Building Code.

f. Variations in soil conditions may be encountered during construction. Determination of such variations will permit correlation between the subsurface exploration data of this report and actual conditions encountered during construction and verification of conformance with the plans and specifications. We recommend that Kim Engineering, Inc. be retained to perform professional observations of foundation subgrades.

This report is based on information available to us on the proposed construction. If the project characteristics are changed from those indicated herein, our recommendations may require some modifications. Please advise us of any changes in the proposed construction.

We recommend that the project specifications include the following statement:

> "A geotechnical engineering report has been prepared for this project by Kim Engineering, Inc. and is available to prospective bidders and/or contractors for informational purposes. This report has been prepared for design purposes only and may not be sufficient to prepare an accurate bid for construction. Contractors wishing copies of this report may secure them from Kim Engineering Inc. at a nominal charge with the understanding that its scope is limited to design considerations."

We have prepared this report in accordance with generally accepted geotechnical engineering practices and make no warranties, either expressed or implied, as to the professional services provided under the terms of our agreement and included in this report.

2. SITE DESCRIPTION AND PROPOSED CONSTRUCTION

The site is located on Rhode Island Avenue between Delaware Place and Blackfoot Place in College Park, Maryland. Presently an existing building is located near the site and this building is expected to be demolished. The site is covered with asphalt and generally flat with existing grade at about El 83.

The proposed building is expected to be a one-story building with slab on grade. The finished floor grade has not been determined at this time but only minor cut or fill is expected. The maximum column load is expected to be about 100 kips and the maximum wall load is to be about 5 kips/lf.

3. SUBSURFACE CONDITIONS

In order to evaluate subsurface conditions at the site, one test boring was drilled in December, 2009. The borings were drilled up to a depth of 20 feet. The results of the test boring, the ground water level data, and the test boring location plan are included at the end of this report as Appendix C.

a. General Stratification

The subsurface investigation indicated the following generalized strata underlie the site to the depth investigated:

Stratum A: From ground surface to a depth of 20 feet.
Brown and gray, silty SAND (SM) and poorly graded SAND (SP), with gravel, moist; generally firm density (N=7 to 41)

Up to 6 inches of topsoil was encountered at the top of the borings. Numbers after the description of the soil strata indicate the minimum and maximum penetration resistances (N values) recorded in each stratum. N values indicate the penetration resistance in blows per foot of a standard (2 inch O.D., 1-3/8 inch I.D.) sampling spoon, driven with a 140 pound hammer, and falling 30 inches per ASTM D-1586. After an initial set of 6 inches to ensure the sampler is in undisturbed material, the number of blows required to drive the sampler an additional 12 inches is recorded as the N value.

The soil symbols indicated in the stratum descriptions and on the boring logs represent the Unified Soil Classification (ASTM D-2488) group symbols and are based primarily on visual observation of the specimens recovered. Criteria for visual-manual classification of soil samples are given in Appendix A of this report.

b. Geology

The natural soils of Stratum A is believed to be terrace deposits from Pleistocene geologic age.

c. Ground Water

Ground water observations were performed at the test boring locations. Ground water level readings recorded upon completion of the drilling operation indicated ground water up to a depth of about 10 feet or El. 73.

Ground water level readings are considered to be a reliable indication of the water levels at the time indicated. Fluctuations of ground water levels, as well as perched water, may be expected with variations of precipitation, evaporation, surface runoff, and related factors.

d. Soil Laboratory Testing

Laboratory testing was performed on jar samples obtained from test borings for soil classification and determination of the moisture content. Results of these tests are included in the Summary of Lab Test Results in Appendix B.

One jar sample from Stratum A was classified as silty SAND (SM) per ASTM D2487. This soil sample contained 46 percent non-plastic fines passing the No. 200 sieve.

4. GEOTECHNICAL ENGINEERING ANALYSIS

The foundation engineering analysis was based on the subsurface exploration data resulting from our field investigation and soil laboratory testing as well as the structural data supplied to us.

a. Spread Footings

The test boring indicates that the firm sandy of Stratum A are generally expected at the proposed footing subgrades. We recommend a design soil bearing pressure of 2,000 psf for spread footings founded on the firm sandy soils of Stratum A or new compacted fill. Footings should be lowered to the natural soil of Stratum A, if any existing fill or unsuitable soils are encountered at the footing subgrade.

We estimate the column and wall settlements should not exceed one inch. Differential settlement between adjacent columns should not exceed one inch as well. Perimeter footings should be founded at a minimum depth of 2.5 feet below the final exterior grade for frost protection.

The suitability of subgrade soils should be evaluated by a representative of our firm during construction phase. Wall footings should be at least 18 inches wide for shear considerations. In areas where existing footings are founded at different grades, or adjacent to utilities, a maximum slope of 1H:1V should be maintained between the bottom edges of adjacent footings or the bottom of the utility excavations.

b. Floor Slab

Floorslabs may be supported on the natural soils of Stratum A or on new compacted fill. A 6 inch layer of washed gravel or crushed stone base should be placed below the floor slab as a moisture barrier. Maryland No. 57 stones are considered suitable for this purpose.

Floor slab subgrades should be observed and tested by a geotechnical engineer from our office to determine whether unsuitable soils are present at the subgrade. Unsuitable soils should be undercut and replaced with compacted fill.

5. EARTHWORK REQUIREMENTS

a. Compacted Fill

Materials for compacted fill and backfill should consist of soils classified as silty sand (SM) or better per ASTM D2487. Compacted fill and backfill should be placed in 8 inch loose lifts and should be compacted to at least 95 percent of the maximum dry density per ASTM D1557.

The natural soils of stratum A are generally considered suitable for use as a new compacted fill. All materials for fill should be approved by the geotechnical engineer prior to the placement of fill.

b. Subgrade Preparation

All topsoil and soft surface soil should be removed prior to placement of new fill. Subgrades should be proofrolled by a 10 ton loaded truck or equivalent and observed by our engineering personnel. Excessively soft or any unsuitable soils should be removed and replaced with suitable compacted fill.

The soils on this site are susceptible to disturbance when exposed to water or to construction activity. Care should be exercised after preparing fill subgrade that it not remain exposed for a long period or be subjected to unnecessary construction traffic prior to placement of compacted fill.

6. CONSTRUCTION CONSIDERATIONS

a. Footing Subgrades

Footing subgrades should be observed by a geotechnical engineer from our office to determine whether the footing subgrades are placed on suitable bearing soils as recommended herein. These observations should include visual identification of the bearing soils and correlation with the test boring logs.

Field testing by probing with a penetrometer at selected locations will also be necessary. Suitable subgrade is anticipated to consist of the firm sand of Stratum A or new compacted fill.

Care should be taken during excavation for footings to minimize disturbance of the subgrade. The footings should be excavated and poured the same day to minimize disturbance of the subgrade from surface runoff into the footing excavations. Disturbed or frozen soil should be removed prior to placement of concrete. The footing excavations should be essentially free of ponded water for observation by the geotechnical engineer during placement of concrete.

b. Earthwork Requirements

We recommend that placement and compaction of fill and backfill materials be scheduled during the months of April through October. It is likely that considerable difficulty in compaction of soils will be encountered if fill operations are scheduled outside of this time period. The on-site soils are susceptible to moisture and will become soft if exposed to water.

c. General and Limitations

The analysis and recommendations submitted in this report are based on data obtained from the test borings drilled at the locations shown on the test boring location plan in Appendix C. This report does not reflect any conditions which may occur at other portions of the site. The nature and extent of variations may not become evident until construction phases. We recommend that our office be retained for observation of footing subgrades during construction to determine whether a re-evaluation of the recommendations of this report is necessary and to provide the necessary consultation.

An allowance should be provided for additional costs that may be required for construction of the foundation. Additional costs may be incurred for various reasons including additional excavations due to unsuitable soils, wet soils, and delays due to weather.

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Identification of Soil

1. Soil Classification Chart (ASTM D-2487-01)

Coarse-Grained Soils More than 50% retained on No.200 sieve	Gravels: More than 50% of coarse fraction retained No.4 sieve, Coarse, 3/4" to 3", Fine, No.4 to 3/4"	Clean Gravels: less than 5% fines	GW	Well graded gravel
			GP	Poorly graded gravel
		Gravels with Fines: more than 12% fines	GM	Silty gravel
			GC	Clayey gravel
	Sands: 50% or more of coarse fraction passes No.4 sieve, Coarse, No.10 to No.4, Medium, No.40 to No.10, Fine, No.200 to No.40	Clean Sands: less than 5% fines	SW	Well graded sand
			SP	Poorly graded sand
		Sands with Fines: more than 12% fines	SM	Silty sand
			SC	Clayey sand
Fine-Grained Soils 50% or more passes No.200 sieve	Silts and Clays: Liquid Limit less than 50 Low to Medium plasticity	Inorganic	CL	Lean clay
			ML	Silt
		Organic	OL	Organic clay
				Organic silt
	Silts and Clays: Liquid Limit 50 or more Medium to High plasticity	Inorganic	CH	Fat clay
			MH	Elastic silt
		Organic	OH	Organic clay
				Organic silt
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor		PT	Peat

Note: Gravelly, Sandy----------if soil contains 30% or more coarse grained soil
with Gravel, with Sand----------if soil contains 15% or more coarse grained soil
with Silt, with Clay----------if soil contains 5% to 12% fine grained soil
trace Sand, trace Gravel----------if soil contains less than 15% coarse grained soil
trace Silt, trace Clay----------if soil contains less than 5% fine grained soil

2. Terminology

1. Boulders and Cobbles: Boulders are considered rounded rock larger than 12", cobbles range 3" to 12".

2. Disintegrated rock: Residual rock material with a standard penetration resistance (SPT) of more than 60 blows per ft. and less than refusal. Refusal is defined as a SPT of 100 blows for 2" or less penetration.

3. Rock fragments: Angular pieces of rock, distinguished from transported gravel, which have separated from original vein or strata and are present in a soil matrix.

4. Fill: Man made deposit of soil, rock, and waste material.

5. Probable fill: Soils which contain no visually detected foreign matter but which may be man made deposit.

6. Ironite: Iron oxide deposited within a soil layer forming cemented deposits.

7. Layers: 1/2 to 12 inch seam of minor soil component.

8. Lenses: 0 to 1/2 inch seam of minor soil component.

9. Mica: A soft plate of silica mineral found in many rocks, and in residual or transported soil derived there from.

10. Moisture conditions: Wet, moist, or dry to indicate visual appearance of specimen.

11. Organic materials:
    a. Top soil: Surface soils that support plant life and which contain considerable amounts of organic matter.
    b. Organic matter: Soil containing organic colloids throughout its structure.
    c. Lignite: Hard, brittle decomposed organic matter with low fixed carbon content.

12. Pocket: Discontinuous body of minor soil component.

13. Quartz: A hard silica mineral often found in residual soils.

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SUMMARY OF LAB TEST RESULTS

Project No.: 10506 | Project Name: Duvall Field |

Boring Number		B-1				
Sample Depth (ft)		8.5 '- 10'				
Description of Sample		silty SAND				
Classification		SM				
Sample Type		Jar				
Sieve Analysis	Passing No. 200 (%)	46				
	Retained on No. 4 (%)	0				
	Retained on 3/4" (%)	0				
Atterburg Limits	Liquid Limit	-				
	Plastic Limit	NP				
	Plasticity Index	-				
Proctor ASTM D698	Maximum Dry Density (p.c.f.)	-				
	Optimum Moisture Content (%)	-				

Note:
1. Soil tests in accordance with applicable ASTM or AASHTO standards.
2. Soil classification symbols are in accordance with Unified or USDA classification systems, based on testing indicated and visual identification.
3. NP = Non-plastic

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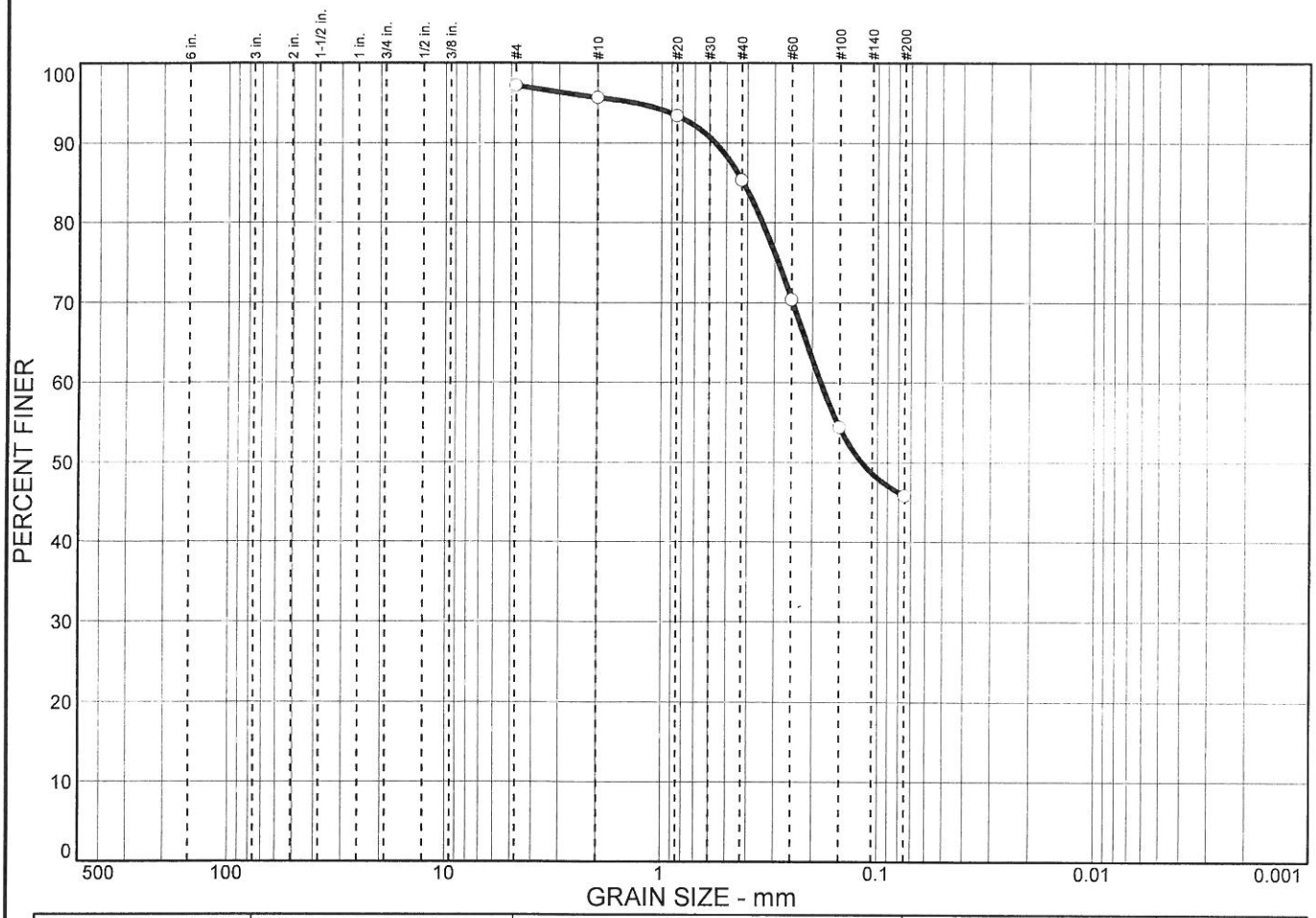
Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
		51.4	45.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	97.2		
#10	95.7		
#20	93.4		
#40	85.3		
#60	70.4		
#100	54.4		
#200	45.8		

* (no specification provided)

Material Description

silty SAND (SM)

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{85}= 0.419 D_{60}= 0.183 D_{50}= 0.119

D_{30}= D_{15}= D_{10}=

C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample No.: B-1 **Source of Sample:** **Date:** 12-29-09

Location: **Elev./Depth:** 8.5'-10'

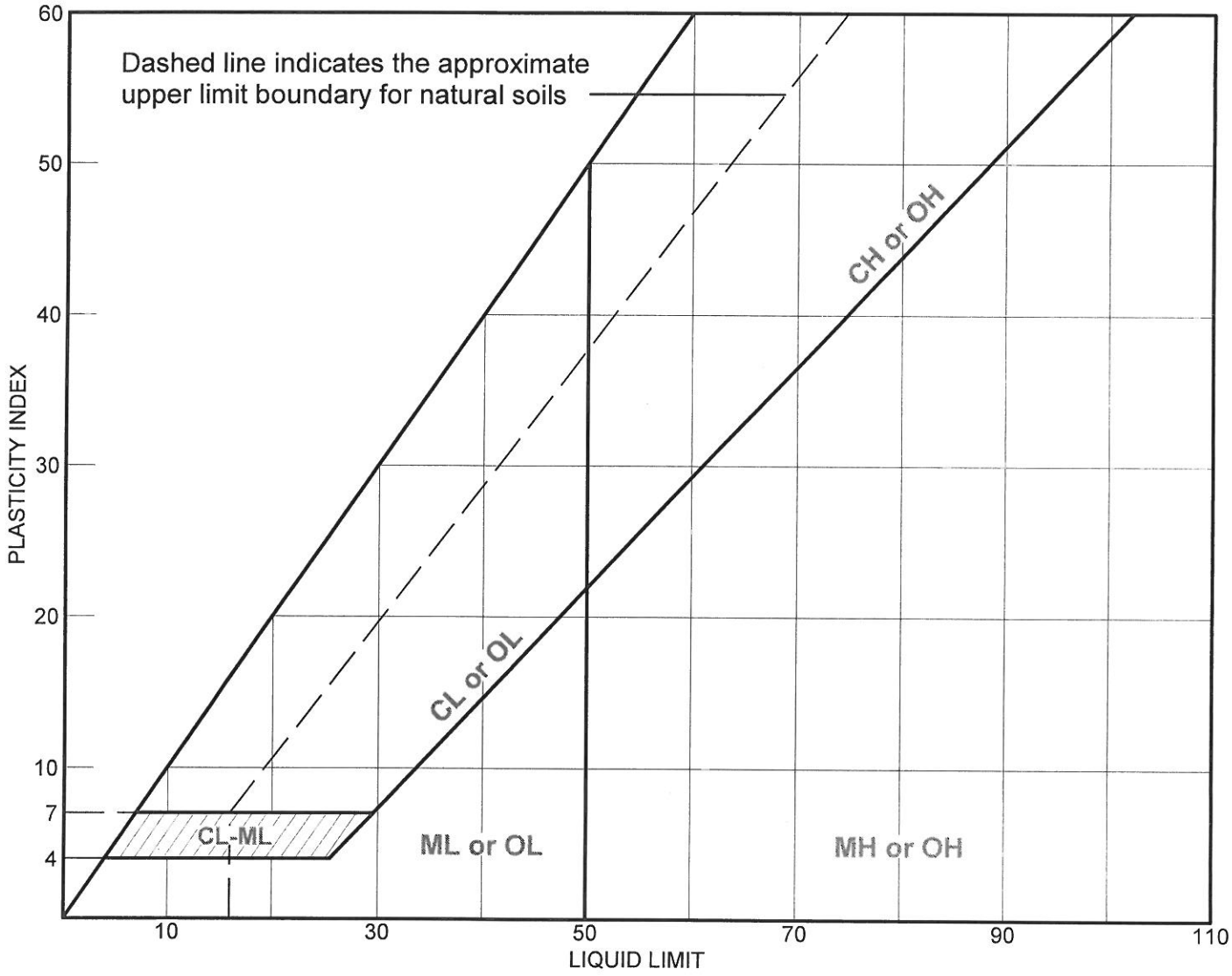
KIM ENGINEERING, INC.

Client: Charles P. Johson & Associates

Project: Duvall Field

Project No: 10506 **Figure No.1**

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●		B-1	8.5'-10'	17	NP	NV	NP	SM

LIQUID AND PLASTIC LIMITS TEST REPORT

KIM ENGINEERING, INC.

Client: Charles P. Johson & Associates

Project: Duvall Field

Project No.: 10506

Figure No.2

SUBSURFACE INVESTIGATION REPORT

General Notes
Test Boring Log
Test Boring Location Plan

Descriptions of Subsurface Investigation Procedures:

1. Test Borings - Hollow Stem Augers

   The borings are advanced by turning an auger with a center opening of 2-1/4 inches. Cuttings are brought to the surface by the auger flights. Sampling is performed through the center opening in the hollow stem auger by standard methods. Usually, no water is introduced into the boring using this procedure.

2. Standard Penetration Tests

   Testing is performed by driving a 2 inch O.D., 1-3/8 inch I.D. sampling spoon through three 6 inch intervals or as indicated, using a 140 pound hammer falling 30 inches, according to ASTM D-1586.

3. Boring Locations and Grades

   Test boring layout was provided by us.

GENERAL NOTES

1. Numbers in the sampling data column indicate the number of blows required to drive a 2 inch O.D., 1-3/8 inch I.D. sampling spoon through three 6 inch intervals or as indicated, using a 140 pound hammer falling 30 inches, according to ASTM D-1586.

2. Strata descriptions are based on visual inspection and are in accordance with the Unified Soil Classification System (ASTM D 2488).

3. The boring logs and related information depict subsurface conditions at these specific locations and at the time when drilled. Soil conditions at other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in changes in the subsurface soil and groundwater conditions at these boring locations.

4. The stratification lines represent the approximate boundary between soil types as determined in the drilling and sampling operation. Some variation may also be expected vertically between samples taken. The soil profiles, water level observations, and penetration resistances presented on boring logs have been made with reasonable care and accuracy and must be considered only as approximate representations of subsurface conditions to be encountered at these locations.

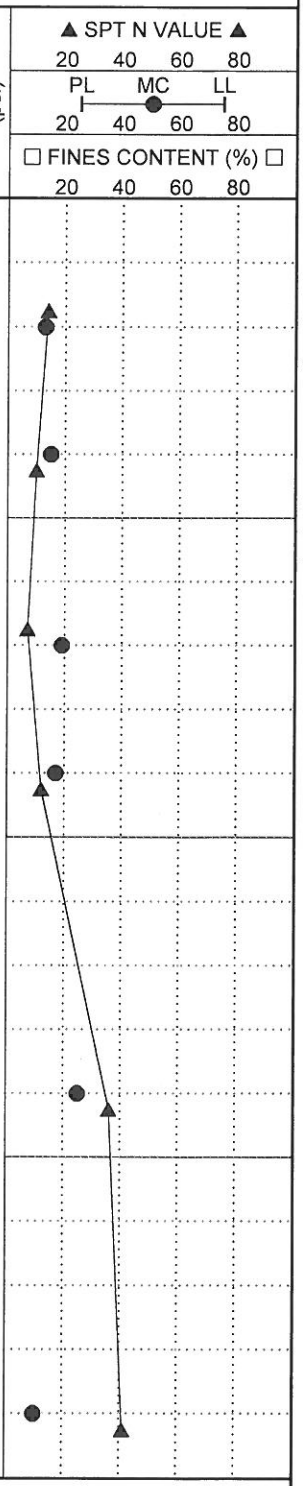
5. Estimated groundwater levels are indicated on the logs. These are only estimates from available data and may vary with precipitation, porosity of the soil, site topography, and similar factors.

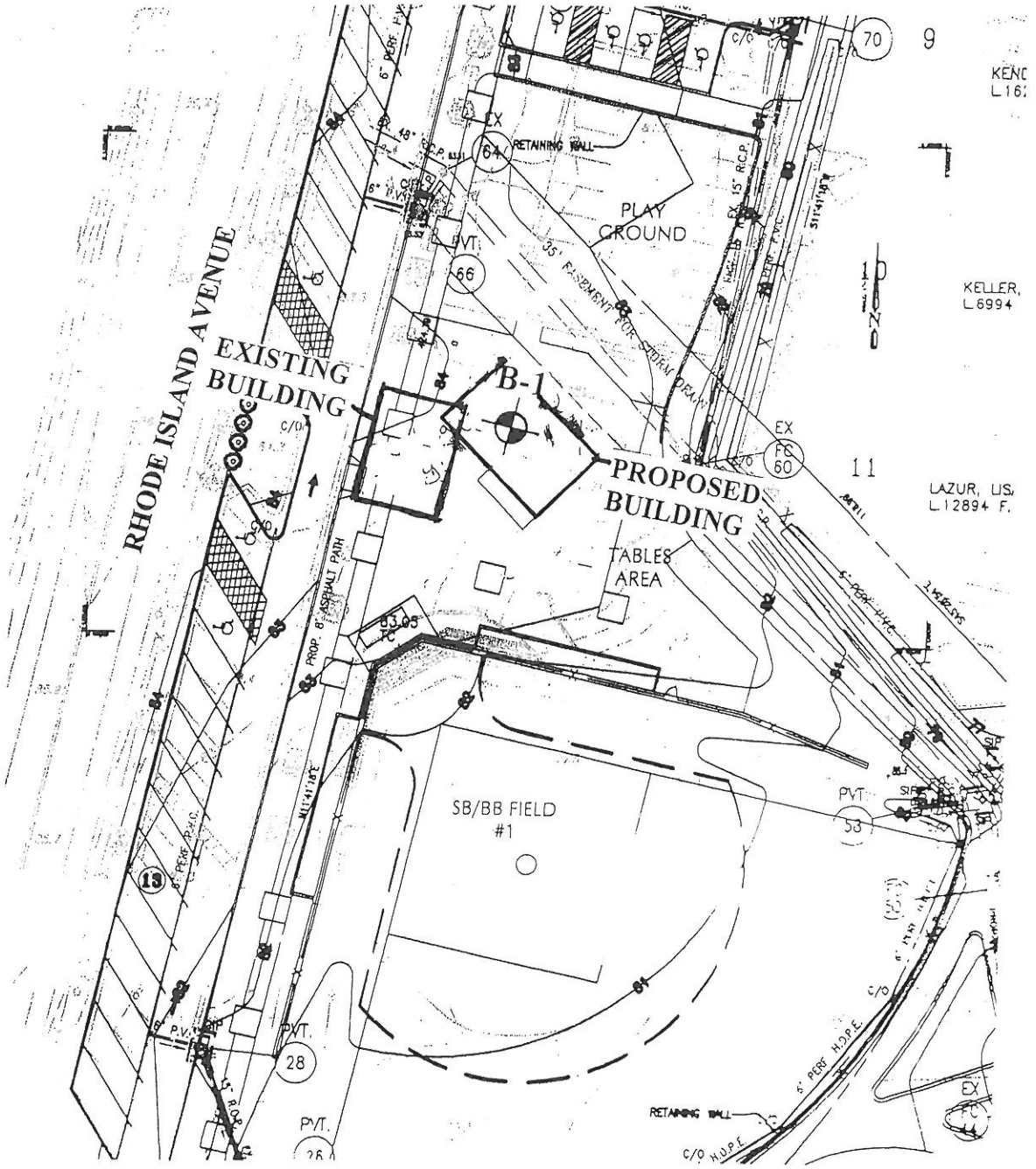
KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Silver Spring, Maryland

BORING NUMBER B-1

CLIENT Charles P. Johnson & Associates
PROJECT NAME Duvall Field
PROJECT NUMBER 10506
PROJECT LOCATION College Park, Maryland
DATE STARTED 12/28/09 **COMPLETED** 12/28/09
GROUND ELEVATION 83 ft **HOLE SIZE** 6 inches
DRILLING CONTRACTOR KEI
GROUND WATER LEVELS:
DRILLING METHOD hollow stem auger
AT TIME OF DRILLING ---
LOGGED BY FAM **CHECKED BY** MSK
AT END OF DRILLING 10.00 ft / Elev 73.00 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)
0		5 inches asphalt					
		silty SAND (SM), moist, brown and gray	SS 1		8-5-9 (14)		
			SS 2		3-4-6 (10)		
5			SS 3		4-2-5 (7)		
			SS 4		5-6-6 (12)		
10		with gravel at 10 feet					
		poorly graded SAND (SP), with gravel, wet, brown and gray	SS 5		8-16-20 (36)		
15							
			SS 6		22-16-25 (41)		
20		Bottom of borehole at 20.0 feet.					





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TEST BORING LOCATION PLAN

Duvall Field

College Park, Maryland

SCALE:	N.T.S.	DATE:	1-06-10
PREPARED BY:	R.E.N.	CHECKED:	M. S. K.
DRAWING NO.:	1	JOB NO.:	10506